BIOSIS

N° 6 - 2020 April - Interaction between plants and animals for innovative feed solutions

THE PLANT

CINNAMON: A lot of beneficial effects

Rich in interesting active metabolites, cinnamon can support animal health and performance.

Cinnamon is rich in interesting active metabolites

Cinnamon (*Cinnamomum sp.*) is a spice obtained from the inner bark of the *Cinnamomum* tree of the *Lauraceae* family. This tree is native to Asia, with several species coming from different geographical locations: *C. zeylanicum*, *C. burmanni*, *C. cassia* and *C. loureiri* respectively from Sri Lanka, Malaysia, China and Vietnam. Today it is cultivated in lots of tropical countries especially Madagascar, India and Indonesia.

The contents in secondary metabolites of cinnamon vary with the species of tree. *C. zeylanicum* is the richer in interesting active metabolites. The major secondary metabolite is cinnamaldehyde and is the one which gives cinnamon its recognizable perfume. Cinnamon has reported antimicrobial, antioxidant, anti-inflammatory and antifungal properties [1] due to cinnamaldehyde as well as a large panel of other secondary metabolites of the polyphenol and terpenoid families such as : benzaldehyde, benzylidenemalonaldehyde, 3-phenylpropanol, eugenol, linalool, cubenol, 9-octadecenamide…

Cinnamon also contains a great amount of tannins (proanthocyanidols) with good antimicrobial properties.

Cinnamon extracts and essential oils showed activities against a lot of bacterial strains (*E. coli, Staphylococcus aureus, Enterococcus faecalis, Listeria monocytogenes, Salmonella typhii*) with MIC often under 1mg/ml [2].

The administration of cinnamon oil has also showed a beneficial and protective effect against opportunistic zoonotic parasites like *Cryptosporidium parvum* in *in vivo* studies [3].

Other *in vivo* studies with animals showed that cinnamon has anti-secretagogue and anti-gastric ulcer effects and is effective against diarrhea [4].

All of these properties make cinnamon a good candidate to support animal health and performance.

[1] Ranasinghe P et al., *BMC Complement Altern Med.*
[2] Bayoub K et al., *Afr J Biotechnol.*
[3] Rosti L and Gastaldi G, Pediatrics.
[4] Alqasoumi S, J Pharmacog Phytother.

World of botanicals

Antifungal bioactivity of phytochemicals

The authors review the interest of plant phytochemicals in food preservation, especially as antifungal compounds. Polyphenols (i.e. curcumin, resveratrol or flavonoids from tea tree), thiols (allicin or diallyl trisulfide from garlic), terpenoids (from plant essential oils) are able to inhibit growth of important spoilage and pathogenic fungi, affecting especially mycelial growth and germination. Production of mycotoxins could also be prevented by some phytochemicals.

In conclusion, phytochemicals are good alternatives to synthetic food additives which generate a negative perception in consumers.

Redondo-Blanco et al., *J. Food Protection, 2020.*

Naringin and chick embryo development

The rapid oxidative metabolism could produce large quantities of free radicals during embryo development which may impair it. Effects of *in ovo* injection of the glycoside naringin (a flavanone found in *Citrus* fruits) few days before hatch were investigated. Body weight and length were increased with naringin injection. Flavanone is a phytoestrogen and showed health beneficial effects on bone quality and increased bone length. Different blood parameters like antioxidative status (increased SOD blood content) were also improved.

Ranjbar et al., *J. Anim. Physiol. Anim. Nutr., 2019.*

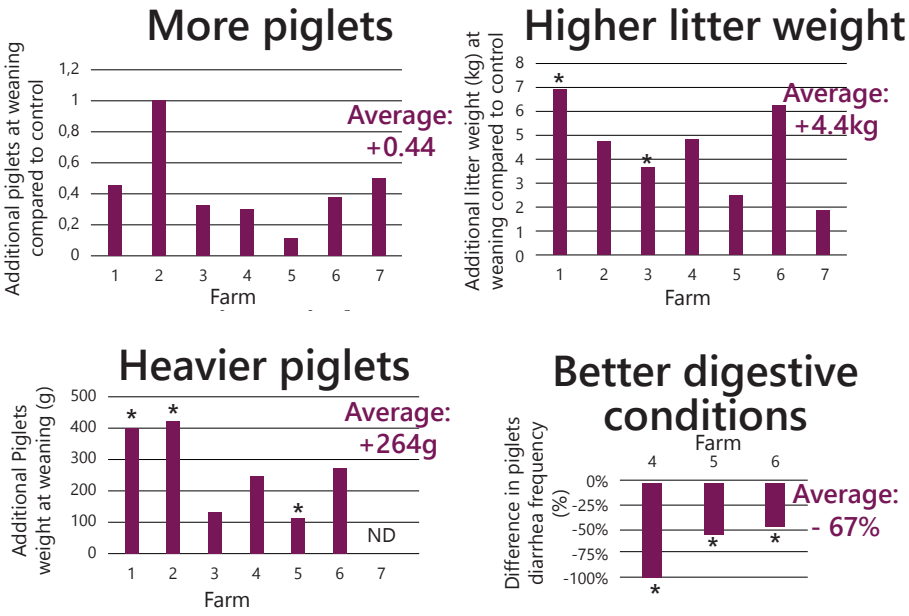
TRIAL RESULTS

ID PHYT CAPCIN in sows: Mini Meta-Analysis

ID PHYT CAPCIN is a complementary feed composed of stimulated chili pepper, which intends to manage the oxido-inflammatory cycle in farm animals. It is especially useful in stressful periods for animals, such as the farrowing and lactation periods in sows in order to support piglets' performance.

The present data summarize 7 field trials which have been done between 2017 and 2019 in Asia (Thailand), South America (Brazil) and Europe (Benelux). It is showing the interest to supplement sows with ID PHYT CAPCIN at a dosage of 1.4 g/sow/day or 200 g/t of feed, from the entrance in farrowing house to weaning.

ID PHYT CAPCIN is especially useful in stressful periods, such as the farrowing and lactation periods in sows



*p<0.1 compared to control for each trial
ND = Not determined

Effect of ID PHYT CAPCIN supplementation on four parameters compared to control groups: number of piglets at weaning, litter weight at weaning, weight of piglets at weaning and digestive conditions of piglets.

The supplementation with ID PHYT CAPCIN also demonstrated interesting results on sow body conditions (more backfat thickness and less body weight loss) and on the interval weaning to oestrus.

Global

First edition of the "BIOSIS DAYS"

Next September 21st and 22nd, ID4FEED will held the first edition of the "BIOSIS DAYS" in Les Pensières Center (part of the Mérieux Foundation, Annecy, France). This annual seminar for customers intends to provide an interdisciplinary view between plants, nutraceutical and animal nutrition. The theme of the year will be "Phytogenics as drivers to fight inflammation of digestive systems".

A new milestone for ID4TECH Lab

ID4TECH, the sister company of ID4FEED, is now offering to make some tests to compare oxidative resistance of oils and fats with or without antioxidants.

This makes it possible to compare natural antioxidant efficacy (liquid or powder forms) at different dosages over time. Some tests have been performed on ID PHYT BORDOX range and demonstrated promising results as alternatives to the synthetic reference (*i.e.* BHT…) .

id4feed Ideas for animal feed

DIARY

Rennes (France) **SPACE exhibition**	**15-18 Sept.**
Annecy (France) **BIOSIS DAYS**	**21-22 Sept.**
Hanover (Germany) **EUROTIER EXHIBITION**	**17-20 Nov.**